Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application. Claims that were amended in the Amendment dated April 16, 2003, are shown in this listing in their amended form and are indicated as "previously presented." Claims 1-4, 6, 12, 34-36, 38-42, and 45-46 are currently amended. New claims 51-56 have been added. These new claims do not introduce new matter and will not require undue additional searches. Support for amendments to the claims and the new claims is replete throughout the specification as originally filed, and is provided in detail in the **REMARKS** starting on page 11.

Listing of Claims:

1. (currently amended) A ~~purified or partially purified~~ cell that expresses a *Moraxella bovis* cytotoxin or a cytotoxin fragment encoded by a recombinant nucleic acid molecule comprising the nucleotide sequence of ~~DNA sequence~~ SEQ ID NO: 1 deposited at GENBANK database under Accession number AF205359 or a modified variant thereof, wherein said cytotoxin fragment is specifically bound by an antibody that specifically binds a full-length *Moraxella bovis* cytotoxin encoded by SEQ ID NO: 2.

2. (currently amended) The cell ~~cytotoxin~~ of claim 1, wherein the cytotoxin or cytotoxin fragment is obtained, purified and isolated from a culture comprising said cell ~~supernatants of a cytolytic strain of *Moraxella bovis*~~.

3. (currently amended) The cell ~~cytotoxin~~ of claim 2, wherein said culture comprises a culture supernatant and wherein said cytotoxin or cytotoxin fragment is isolated from the culture supernatant ~~supernatants purified~~ by centrifugation, filtration, concentration and diafiltration.

4. (currently amended) The cell ~~cytotoxin~~ of claim 3, wherein said diafiltration produces ~~cytotoxin is isolated from~~ a diafiltered retentate and a diafiltered permeate, wherein

said diafiltered retentate is enriched for the cytotoxin or cytotoxin fragment relative to the diafiltered permeate.

5. (cancelled)

6. (currently amended) The cell ~~cytotoxin~~ of claim 4, wherein said cytotoxin or cytotoxin fragment ~~having a leukotoxic biological activity which~~ causes lysis of bovine lymphocyte ~~neutrophils and lymphoma~~ cells.

7. (cancelled)

8. (withdrawn) A DNA sequence depicted by SEQ ID NO: 1 or a fragment thereof, encoding an amino acid sequence depicted by SEQ ID NO: 2 or a fragment thereof.

9. (withdrawn) The DNA sequence of claim 8 wherein a fragment encodes a protein depicted by SEQ ID NO: 6 or a protein depicted by SEQ ID NO: 13.

10. (withdrawn) The DNA sequence of claim 9 encoding the protein depicted by SEQ ID NO: 6.

11. (withdrawn) The DNA sequence of claim 9 encoding the protein depicted by SEQ ID NO: 13.

12. (currently amended) The cell of claim 1, wherein said cytotoxin comprises the ~~An isolated~~ amino acid sequence depicted by SEQ ID NO: 2 .

13. (previously presented) An isolated amino acid sequence depicted by SEQ ID NO: 6.

14. (previously presented) An isolated amino acid sequence depicted by SEQ ID NO: 13.

15. (cancelled)

16. (withdrawn) A method for prophylaxis of bovine keratoconjunctivitis comprising a step of vaccinating cattle or calves with a vaccine comprising *M. bovis* cytotoxin.

17. (withdrawn) The method of claim 16 wherein the vaccine is based on a native cytotoxin.

18. (withdrawn) The method of claim 16 wherein the vaccine is based on a recombinantly derived cytotoxin.

19. (withdrawn) A method of diagnosing *M. bovis* in a carrier cattle by reacting the cattle serum with antibodies raised against *M. bovis* cytotoxin comprising an amino acid sequence depicted by SEQ ID NO: 2.

20. (withdrawn) The method of claim 19 wherein the *M. bovis* cytotoxin is captured by antigen capture ELISA and identified by reaction with antibodies.

21. (withdrawn) The method of claim 20 wherein the antibodies are monoclonal.

22. (withdrawn) The method of claim 20 wherein the antibodies are polyclonal.

23-25. (cancelled)

26. (withdrawn) A nucleotide sequence depicted by SEQ ID NO: 30, SEQ ID NO: 31 or SEQ ID NO: 36, encoding an amino acid sequence depicted by SEQ ID NO: 18, SEQ ID NO: 32 or SEQ ID NO: 37.

27. (withdrawn) The sequence of claim 26 depicted by SEQ ID NO: 30.

28. (withdrawn) The sequence of claim 26 depicted by SEQ ID NO: 31.

29. (withdrawn) The sequence of claim 26 depicted by SEQ ID NO: 36.

30. (withdrawn) A peptide comprising an amino acid sequence depicted by SEQ ID NO: 18, SEQ ID NO: 32 and SEQ ID NO: 37.

31. (withdrawn) The peptide of claim 30 depicted by SEQ ID NO: 18.

32. (withdrawn) The peptide of claim 30 depicted by SEQ ID NO: 32.

33. (withdrawn) The peptide of claim 30 depicted by SEQ ID NO: 38.

34. (currently amended) An anti-*Moraxella bovis* vaccine consisting essentially of a ~~purified recombinant *Moraxella bovis*~~ cytotoxin or cytotoxin fragment provided in claim 2 ~~depicted by the amino acid sequence depicted by SEQ ID NO: 2~~.

35. (currently amended) The vaccine of claim 34 wherein said cytotoxin or cytotoxin fragment is formulated in admixture with an adjuvant.

36. (currently amended) The vaccine of claim ~~claims~~ 35 wherein said adjuvant is an immunostimulating (ISCOM) matrix.

37. (previously presented) The vaccine of claim 36 wherein said ISCOM matrix comprises *Quillaja* saponins, cholesterol and phospholipids.

38. (currently amended) The vaccine of claim 37 wherein said cytotoxin or cytotoxin fragment is mixed with said adjuvant in a 1 to 1 volume ratio.

39. (currently amended) The vaccine of claim 38 wherein 1 ml of the adjuvant is mixed with 1 ml of a ~~purified cytotoxin~~ solution comprising the cytotoxin or cytotoxin fragment.

40. (currently amended) The vaccine of claim 39 wherein said ~~purified cytotoxin~~ solution comprises 0.5 mg/ml of the ~~purified~~ cytotoxin or cytotoxin fragment.

41. (currently amended) The ~~An anti *Moraxella bovis*~~ vaccine of claim 34, wherein the ~~consisting essentially of a purified recombinant *Moraxella bovis*~~ cytotoxin fragment comprises ~~depicted by~~ the amino acid sequence depicted by SEQ ID NO: 6.

42. (currently amended) The vaccine of claim 41 wherein said cytotoxin fragment is formulated in admixture with an adjuvant.

43. (previously presented) The vaccine of claims 42 wherein said adjuvant is an immunostimulating (ISCOM) matrix.

44. (previously presented) The vaccine of claim 43 wherein said ISCOM matrix comprises *Quillaja* saponins, cholesterol and phospholipids.

45. (currently amended) The ~~An anti *Moraxella bovis*~~ vaccine of claim 34, wherein the ~~consisting essentially of a purified recombinant *Moraxella bovis*~~ cytotoxin fragment comprises ~~depicted by~~ the amino acid sequence depicted by SEQ ID NO: 13.

46. (currently amended) The vaccine of claim 45 wherein said cytotoxin fragment is formulated in admixture with an adjuvant.

47. (previously presented) The vaccine of claims 46 wherein said adjuvant is an immunostimulating (ISCOM) matrix.

48. (previously presented) The vaccine of claim 47 wherein said ISCOM matrix comprises *Quillaja* saponins, cholesterol and phospholipids.

49. (previously presented) A recombinant protein depicted by the amino acid sequence SEQ ID NO: 6.

50. (previously presented) A recombinant protein depicted by the amino acid sequence SEQ ID NO: 13.

51. (new) The cell of claim 1, wherein said cell is a bacterial cell.

52. (new) The cell of claim 1, wherein said recombinant nucleic acid molecule comprises an expression vector.

53. (new) The cell of claim 1, wherein said cytotoxin or cytotoxin fragment has a molecular weight of about 95 or 98 kDa.

54. (new) The cell of claim 4, wherein said diafiltered retentate is fractionated using gel filtration chromatography.

55. (new) A composition comprising a polypeptide, wherein the polypeptide comprises a fragment of the amino acid sequence of SEQ ID NO: 2, wherein the fragment is shorter than the full length amino acid sequence of SEQ ID NO: 2, and wherein the fragment is selected from:

a) a fragment that is capable of stimulating antibody production in an animal, wherein the antibodies produced by the animal specifically bind the polypeptide of SEQ ID NO: 2;
b) a fragment that displays bovine lymphocyte cytolytic activity;
c) a fragment that displays hemolytic activity;
d) a fragment that displays corneotoxic activity;
e) the fragment of (a) comprising any combination of (b), (c) or (d);

f) amino acids 438 through 713, inclusive;

g) amino acids 590 through 927, inclusive; and,

h) amino acids 643 through 927, inclusive.

56. (new) The composition of claim 55, wherein the composition is immunogenic.